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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/738,977	12/19/2000	Yoshichi Otake	24462	2690

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EXAMINER	
HANNETT, JAMES M	

ART UNIT	PAPER NUMBER
2612	5

DATE MAILED: 05/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/738,977	OTAKE ET AL.	
	Examiner	Art Unit	
	James M Hannett	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-8 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-8 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 12/19/2000 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 2 and 4.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Image pickup device capable of preventing moirés during image capture.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1: Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by USPN 5,781,236 Shinbori et al.

2: As for Claim 1, Shinbori et al teaches on Column 8, Lines 54-67, Column 9, Lines 1-5 and Column 5, Lines 10-21 and depicts in Figure 1 an image pickup device having a solid state image sensor (307) for converting an optical image to electric signals that operates under an image shift mode and a normal mode, said image shift mode is a high resolution mode in which pixels in said solid state image sensor are interpolated in order to increase a resolution, and said normal operation mode is lower in resolution than said image shift mode, said image pickup device comprising: Shinbori et al teaches on Column 10, Lines 30-36 and depicts in Figure 7 one or a pair of optical low pass filters (13) that being rotatably placed in a vertical plane that being vertical to an optical axis; and Shinbori et al teaches on Column 9, Lines 18-24 and depicts in

Figure 2 a rotary mechanism (309) for rotating said optical low pass filter (13) in said vertical plane that is vertical to said optical axis. Shinbori et al teaches on Column 17, Lines 58-62 said rotary mechanism (309) rotates said optical low pass filter (13) in order to change an angle of said optical low pass filter in said normal mode and said image shift mode.

3: In regards to Claim 2, Shinbori et al teaches on Column 8, Lines 54-67, Column 9, Lines 1-5 and Column 5, Lines 10-21 and depicts in Figure 1 an image pickup device having a solid state image sensor (307) for converting an optical image to electric signals that operates under an image shift mode and a normal mode, said image shift mode is a high resolution mode in which pixels in said solid state image sensor are interpolated in order to increase a resolution, and said normal operation mode is lower in resolution than said image shift mode, said image pickup device comprising: Shinbori et al teaches on Column 10, Lines 30-36, Column 5, Lines 23-25 and depicts in Figure 7, a first optical low pass filter (11) that being fixed in a vertical plane that being vertical to an optical axis; a second optical low pass filter (13) that being rotatably placed in said vertical plane that being vertical to said optical axis; the second optical low pass filter is viewed by the examiner as the birefringence plate (13). Shinbori et al teaches on Column 9, Lines 18-24 and depicts in Figure 2 a rotary mechanism (309) for rotating said second optical low pass filter (13) in said vertical plane that is vertical to said optical axis. Shinbori et al teaches on Column 17, Lines 58-62 said rotary mechanism (309) rotates said second optical low pass filter (13) in order to change an angle of said second optical low pass filter in said normal mode and said image shift mode.

4: As for Claim 3, Shinbori et al teaches on Column 5, Lines 9-25, Column 9, Lines 59-67 and Depicts in Figure 7 during said normal mode (natural image capture mode), a separation

direction of a light from said first optical low pass filter (11) is the same as that from said second optical low pass filter (13), and during said image shift mode (high-definition mode), the separation direction of said light from said first optical low pass filter (11) is a desired angle to said separation direction of a light from said second optical low pass filter (13) in order to set these separation direction of said first (11) and second (13) optical low pass filters in two directions.

5: In regards to Claim 4, Shinbori et al teaches on Column 8, Lines 54-67, Column 9, Lines 1-5 and Column 5, Lines 10-21 and depicts in Figure 1 an image pickup device having a solid state image sensor (307) for converting an optical image to electric signals that operates under an image shift mode and a normal mode, said image shift mode is a high resolution mode in which pixels in said solid state image sensor are interpolated in order to increase a resolution, and said normal operation mode is lower in resolution than said image shift mode, said image pickup device comprises: Shinbori et al teaches on Column 10, Lines 30-36, Column 5, Lines 23-25 , and Column 13, Lines 1-9 and depicts in Figure 7 first (11) and second (12) optical low pass filters that being fixed in a vertical plane that being vertical to an optical axis; a third optical low pass filter (13) that being rotatably placed in said vertical plane that being vertical to said optical axis. Shinbori et al teaches on Column 9, Lines 18-24 and depicts in Figure 2 a rotary mechanism (309) for rotating said third optical low pass filter (13) in said vertical plane that is vertical to said optical axis. Shinbori et al teaches on Column 17, Lines 58-62 said rotary mechanism (309) rotates said third optical low pass filter (13) in order to change an angle of said third optical low pass filter (13) in said normal mode and said image shift mode.

6: As for Claim 5, Shinbori et al teaches on Column 10, Lines 30-35 when said normal mode (natural image capture mode) is switched to said image shift mode (high resolution mode), a change mount of a rotation angle or a separation width of a light from said optical low pass filter (13) by aid rotary mechanism is optimally determined based on at least one of or a combination of a characteristic of an image pickup optical mechanism, a characteristic of a color filter, a characteristic of a signal processing circuit system including a CCD. Deciding the angle from characteristics such as the separation distance and direction of the incident light, of the elements constructing the optical low-pass filter is viewed as a characteristic of the image pickup optical mechanism. Furthermore, Shinbori et al teaches on Column 5, Lines 55-65 that the angle of rotation of the optical-low pass filter can be changed based on the mode of operation of the camera such as a high-resolution mode and a natural-image sensing mode. Therefore, the angle of rotation is determined based on characteristics of the signal processing system. Furthermore, Shinbori et al teaches on Column 3, Lines62-63 that the image sensing element can be a (CCD)

7: In regards to Claim 6, Shinbori et al teaches on Column 10, Lines 30-35 when said normal mode (natural image capture mode) is switched to said image shift mode (high resolution mode), a change mount of a rotation angle or a separation width of a light from said second optical low pass filter (13) rotated by said rotary mechanism is optimally determined based on at leased one of or a combination of a characteristic of an image pickup optical mechanism, a characteristic of a color filter, a characteristic of a signal processing circuit system including a CCD. Deciding the angle from characteristics such as the separation distance and direction of the incident light, of the elements constructing the optical low-pass filter is viewed as a characteristic of the image pickup optical mechanism. Furthermore, Shinbori et al teaches on Column 5, Lines

55-65 that the angle of rotation of the optical-low pass filter can be changed based on the mode of operation of the camera such as a high-resolution mode and a natural-image sensing mode. Therefore, the angle of rotation is determined based on characteristics of the signal processing system. Furthermore, Shinbori et al teaches on Column 3, Lines62-63 that the image sensing element can be a (CCD)

8: As for Claim 7, Shinbori et al teaches on Column 10, Lines 30-35 when said normal mode (natural image capture mode) is switched to said image shift mode (high resolution mode), a change mount of a rotation angle or a separation width of a light from said second optical low pass filter (13) rotated by said rotary mechanism is optimally determined based on at leased one of or a combination of a characteristic of an image pickup optical mechanism, a characteristic of a color filter, a characteristic of a signal processing circuit system including a CCD. Deciding the angle from characteristics such as the separation distance and direction of the incident light, of the elements constructing the optical low-pass filter is viewed as a characteristic of the image pickup optical mechanism. Furthermore, Shinbori et al teaches on Column 5, Lines 55-65 that the angle of rotation of the optical-low pass filter can be changed based on the mode of operation of the camera such as a high-resolution mode and a natural-image sensing mode. Therefore, the angle of rotation is determined based on characteristics of the signal processing system. Furthermore, Shinbori et al teaches on Column 3, Lines62-63 that the image sensing element can be a (CCD)

9: In regards to Claim 8, Shinbori et al teaches on Column 10, Lines 30-35 when said normal mode (natural image capture mode) is switched to said image shift mode (high resolution mode), a change mount of a rotation angle or a separation width of a light form said third optical

low pass filter (13) rotated by said rotary mechanism is optimally determined based on at leased one of or a combination of a characteristic of an image pickup optical mechanism, a characteristic of a color filter, a characteristic of a signal processing circuit system including a CCD. Deciding the angle from characteristics such as the separation distance and direction of the incident light, of the elements constructing the optical low-pass filter is viewed as a characteristic of the image pickup optical mechanism. Furthermore, Shinbori et al teaches on Column 5, Lines 55-65 that the angle of rotation of the optical-low pass filter can be changed based on the mode of operation of the camera such as a high-resolution mode and a natural-image sensing mode. Therefore, the angle of rotation is determined based on characteristics of the signal processing system. Furthermore, Shinbori et al teaches on Column 3, Lines62-63 that the image sensing element can be a (CCD).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. USPN 6,678,000 Sakata teaches a high resolution image capture apparatus that shifts pixels; USPN 5,834,761 Okada et al teaches a camera that uses a plurality of low-pass filters and a low-pass filter that is rotated; US 2002/0057346 Hirasawa et al teaches the use of an image processing apparatus that shifts an image and a low-pass filter; USPN 6,577,341 Yamada et al teaches the use of an imaging apparatus that shifts an image incident on an image sensor by rotating a low-pass filter; USPN 6,195,125 Udagawa et al teaches the use of a pixel shifting image sensor; USPN 6,100,929 Ikede et al teaches the use of an image taking system in which a high resolution image having suppressed color moiré is obtained.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M Hannett whose telephone number is 703-305-7880. The examiner can normally be reached on 8:00 am to 5:00 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on 703-305-4929. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James M. Hannett
Examiner
Art Unit 2612

JMH
May 12, 2004